

# ONRSR Policy

## Level Crossings



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- > Periodic review with minor updates to reflect change to the definition of a level crossing from 1 July 2019

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## 1 Purpose

Every year, right around Australia, people die needlessly at level crossings. Reducing safety risks at crossings and preventing these tragedies is a collective community responsibility. Be it members of the public, rail transport operators, the broader rail and road transport industries, governments, emergency services or safety regulators, everyone has a vital role to play.

The Office of the National Rail Safety Regulator (ONRSR) firmly believes that the risk to human life and the significant financial costs of a collision can be reduced with ongoing investment, co-operation, and collaboration by each of these groups.

This policy sets out ONRSR's approach and broader expectations for improving the safety of railway operations with regard to existing level crossings and the early design of future road and rail intersections.

## 2 Background

There are over 19,000<sup>1</sup> open level crossings in Australia, representing a major risk to railway safety by exposing train drivers, passengers, pedestrians, motorists and cyclists to collisions that often result in serious injuries or fatalities, as well as a financial cost. There were 40 collisions at crossings between trains and road vehicles in 2017-18 alone<sup>2</sup>, and in the three years from July 2015 to June 2018 ten people lost their lives<sup>3</sup>.

## 3 Scope

This policy underpins all interactions ONRSR and its officers have with regard to level crossing safety. In doing so it also sets out the expectations that ONRSR has for the rail industry, road managers and governments to reduce the safety risk of level crossings.

## 4 Definitions

- > **level crossing** – includes each of the following areas:
  - (a) an area where a road and a railway (other than a tramway) meet at substantially the same level, whether or not there is a level crossing sign on the road at all or any of the entrances to the area
  - (b) an area where a road and a tramway meet at substantially the same level and that has a level crossing sign on the road at each entrance to the area;
  - (c) a pedestrian crossing—
    - (i) being an area where a footpath or shared path crosses a railway (other than a tramway) at substantially the same level, whether or not there is a level crossing sign on the path at all or any of the entrances to the area; or
    - (ii) being an area where a footpath or shared path crosses a tramway at substantially the same level and that has a level crossing sign on the path at each entrance to the area.
- > **rail infrastructure manager** – in relation to rail infrastructure of a railway, means the person who has effective control and management of the rail infrastructure, whether or not the person owns the rail infrastructure; or has a statutory or contractual right to use the rail infrastructure or to control, or provide, access to it.
- > **rail or road crossing** – includes each of the following:

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<sup>1</sup> Australian Level Crossing Assessment Model (ALCAM), data extracted 21 March 2019.

<sup>2</sup> ONRSR, Rail Safety Report 2017 - 2018

<sup>3</sup> ONRSR, Rail Safety Report 2015-16 (table 1), 2016-17 (table 1), 2017-18 (tables 1 and 2)

- (a) a level crossing
  - (b) an area where a road and a tramway meet at substantially the same level, where there is no level crossing sign on the road at all or any of the entrances to the area
  - (c) an area where a footpath or shared path crosses a tramway at substantially the same level, where there is no level crossing sign on the path at all or any of the entrances to the area
  - (d) a bridge carrying a road over a railway
  - (e) a bridge carrying a railway over a road
  - (f) a lane of a road on which rolling stock moves alongside road vehicles on the road
- > **rail transport operator** – a rail infrastructure manager, or a rolling stock operator, or a person who is both. Rail transport operators must comply with the RSNL and requirements for minimising the safety risks of their railway operations *so far as is reasonably practicable*.
  - > **registered person** – rail infrastructure manager of a private siding who is currently registered under the RSNL.
  - > **road manager** –in relation to a private road means the owner, or other person responsible for the care, control and management, of the road. In relation to a public road, means an authority, person or body responsible for the care, control or management of the road. Road managers have specific responsibilities under the RSNL Part 3, Division 6, Subdivision 2.
  - > **RSNL** – means the Rail Safety National Law which has been enacted as a Schedule to the *Rail Safety National Law (South Australia) Act 2012 (SA)*, as it applies in each state and territory. In Western Australia, 'RSNL' means the Rail Safety National Law which has been enacted as mirror legislation in the *Rail Safety National Law (WA) Act 2015*.
  - > **National Regulations** – means the Rail Safety National Law National Regulations 2012; or the Rail Safety National Law (WA) Regulations 2015 in Western Australia.

Terms are defined in section 4 of the RSNL. Where terms are not defined within the legislation or regulations the Macquarie Dictionary definition applies.

Use of the word 'should' indicates a recommendation of ONRSR. However, the rail transport operator or road manager is free to follow a different course of action provided it complies with the legislation. Use of the word 'must' indicates a legal requirement where compliance is mandatory.

## 5 Legislative framework

The RSNL establishes a shared responsibility for safe railway operations at level crossings - between road managers and rail transport operators, and also rail safety workers, other persons involved in the rail industry, ONRSR and the public.

The document is intended to be read in conjunction with the legislation and other relevant ONRSR policies. It is not intended to replace the legislation, or to limit or expand the scope of the legislation. In the event of an inconsistency between this policy and the legislation, the legislation will prevail.

Rail and road managers must ensure they also comply with relevant road laws.

## 6 Meaning of a level crossing

There are various terms used in the rail industry to describe a level crossing. ONRSR uses terms as they are defined in the RSNL. Reference to a level crossing in the RSNL includes an area where a road, or footpath (pedestrian or bicycle path), crosses a railway at substantially the same level (whether or not it is signed as a level crossing).

Level crossings are treated with traffic control devices, which are referred to as a form of 'protection' or 'control'. As such they may be protected by *active controls* (such as flashing light

signals, bells or other audible warning devices, gates or barriers, or a combination of these, where the device is activated prior to and during the passage of a train through the crossing); or *passive controls* (signs or devices, none of which are activated during the approach or passage of a train, and which rely on the user detecting the approach or presence of a train by direct observation). There are also level crossings that are unprotected (on private properties, for example).

## 6.1 Tramways / light rail

The definition of a level crossing specifically excludes intersections with a road or footpath that are *not* signed as a level crossing. Typically, these are road intersections where the tram must obey the road rules and traffic controls, such as traffic lights (sometimes referred to as a ‘street crossing’). These are not signed as railway/ level crossings and are unique to other crossings in that the tram does not have automatic right of way and traffic at the intersection is coordinated by road rules and controls.

Tram operators (and other light rail) and interfacing road managers for this particular type of intersection, are however subject to the requirements for a *rail or road crossing* to seek an interface agreement, and other requirements for eliminating or minimising risk to safety *so far as is reasonably practicable* under the RSNL.

## 6.2 Private level crossings

Level crossings may be ‘public’ or ‘private’. The focus of this policy is public crossings which are generally a greater safety risk to the public.

Private crossings (or ‘occupation’ crossings) are on private land and often exclusively used by the landowner (who is usually the private road manager) or with permission of the landowner, and with agreement by the rail infrastructure manager. The risks of these crossings are usually lessened by limited, controlled traffic, and the application of this policy should be considered in relation to those risks. These risks are increased if crossings are ‘illegal’ which means that the rail infrastructure manager did not agree or was not made aware of their construction. Private level crossings are subject to the requirements of the RSNL.

ONRSR recognises that private crossings are not subject to signage requirements set out in AS 1742.7 and not all are included in the Australian Level Crossing Assessment Model (ALCAM).

Private road managers are also subject to requirements for interface management. Under section 108 of the RSNL, a private road manager must enter into an interface agreement if provided with a written notice by the responsible rail infrastructure manager stating that the safety risks warrant such an agreement. When provided with such a notice, private road managers are required to comply with the RSNL and identify and manage the risks to safety at these crossings, in conjunction with the rail infrastructure manager (refer also to section 11 of the policy).

## 7 Role of ONRSR

ONRSR has a range of functions, powers and responsibilities for facilitating and improving rail safety under the RSNL. These include responsibilities for monitoring and enforcing compliance by rail transport operators, road managers and governments with their safety duties to eliminate or

minimise the safety risks of level crossings *so far as is reasonably practicable*<sup>4</sup> (SFAIRP). This includes the safety risk of future level crossings.

As level crossings are not just a matter for the rail industry, ONRSR strongly advocates for joint road and rail initiatives. Although level crossings are a recognised risk in the rail sector, initiatives to control safety risks cannot be effective without actions by road managers and governments to reduce the road safety risk, including working with the public to influence road user behaviour.

Road user behaviour is, both unintentionally and recklessly, the leading cause of accidents at level crossings. The potential impacts of an accident involving a heavy vehicle are even greater as they are more likely to cause significant damage and casualty.

National coordination is critical and ONRSR works collaboratively with industry and governments. At the national level ONRSR strongly supports and participates in the work of the National Level Crossing Safety Committee as the recognised national group coordinating government and industry efforts. Locally, ONRSR also participates in state/territory coordination efforts and works with individual rail transport operators.

ONRSR will continue to support efforts by individual rail transport operators through to national committees to reduce the risk of level crossings by:

- > providing level crossing data and intelligence
- > publishing rail safety trends and highlighting risk priorities in the annual Rail Safety Report
- > providing information and advice to ensure compliance with the RSNL
- > acknowledging and participating in research development or other initiatives
- > supporting the use of high quality national safety standards and guidance
- > advocating level crossing safety and promoting this as a priority
- > encouraging public awareness campaigns that promote safety at level crossings

## 8 Innovation in level crossing safety

A major barrier to improving the safety of level crossings is cost. ONRSR supports innovation and the development of new technologies or methods for reducing the costs of active controls.

ONRSR participates in the research of new technology by the Australian Centre for Rail Innovation to provide regulatory advice, but cannot broadly endorse particular technologies or set industry requirements to use or 'upgrade' to specific technologies. These must always be considered in context of the specific risks at a crossing.

The integrity of an engineering solution used by a rail transport operator or road manager should be commensurate with the level of risk being mitigated. The use of a new (or existing) technology, or combination of technologies, is subject to a risk assessment by the rail transport operator and/or road manager. It may also require a variation of accreditation.

For new technology in particular, the integrity of the technology, must be included in the risk assessment to help determine if it is appropriate for the risk being minimised (ie a greater level of integrity is required for a greater risk).

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<sup>4</sup> Further information is in the ONRSR Meaning of Duty to Ensure Safety So Far As Is Reasonably Practicable guideline.

Risk mitigation provided by a new technology at a level crossing must ensure safety risks are eliminated or minimised SFAIRP. This means that it should be the same or better than what was there before.

ONRSR recognises the role of the Rail Industry Safety and Standards Board (RISSB) in developing national standards to support consistency in the use of new technology and innovations across networks/jurisdictions.

## 9 Construction of new level crossings

In terms of managing risks to safety, ONRSR upholds that no new level crossings should be constructed. Where a new crossing is necessary, safety risks must be eliminated or minimised SFAIRP through the design of new infrastructure consistent with requirements of the RSNL.

### 9.1 No new level crossings

ONRSR does not support the construction of new level crossings and strongly encourages governments and industry to commit to a firm policy of 'no new level crossings'. Investment in early planning to avoid the creation of level crossings has long-term safety benefits.

Even where active controls are in place, there are still a high number of near misses – in 2017-18 the ONRSR received around 630 notifications of near misses between trains and road vehicles<sup>5</sup>. Given the safety risk and severity of level crossing accidents, the only truly safe alternative is not to build a level crossing at all.

### 9.2 Expectations for infrastructure planning

ONRSR has committed to working beyond the normal regulatory cycle with rail transport operators, road managers, land developers and governments planning the upgrade, opening or construction of level crossings. Early involvement provides the greatest opportunity to eliminate safety risks through the design of new infrastructure at a lower cost than may otherwise be the case.

Proposals for level crossings are often made as part of a major project<sup>6</sup>. ONRSR expects that projects in either *greenfield* (new) or *brownfield* (existing) locations do not propose the construction of new level crossings. Brownfield projects should also include assessment of the potential to close any existing level crossings and, if they are to remain, demonstrate that safety will be ensured SFAIRP.

If it is unavoidable that road and railway lines must cross, then 'grade separation' is the most effective option for minimising risks to safety. The cost of grade separation should be assessed by operators (including planning authorities) against its long-term safety benefit, to determine if the cost is proportionate to the benefit (making a determination of 'reasonably practicable', as per section 47 of the RSNL).

For construction of a high risk level crossing, particularly where there is major financial investment from road and/or rail, grade separation may be a viable option. For lower risk level crossings, however, operators may be able to demonstrate that alternative controls minimise the risk to safety SFAIRP.

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<sup>5</sup> <https://www.onrsr.com.au/publications/national-safety-data/key-occurrences>

<sup>6</sup> Further information is provided in the ONRSR Major Projects Guideline.

Where it cannot be demonstrated that risks to safety have been eliminated or minimised SFAIRP, including with road safety controls, ONRSR may issue a notice on the operator, suspend/ cancel/ reject accreditation or impose conditions and restrictions on rail transport operations.

## 10 Existing level crossings

ONRSR expects to see continuous improvement in the safety of level crossings, including upgraded safety controls and removal of disused level crossings. Ultimately ONRSR seeks a reduction in the number of level crossings.

To assess and mitigate safety risks appropriately, rail infrastructure managers should apply recognised standards as appropriate.

The current Australian Standards which the ONRSR expects industry to reference are:

- > AS1742.7:2016 - Manual of Uniform Traffic Control Devices Part 7: Railway Crossings
- > AS/RISSB 7658:2012 Railway Infrastructure - Railway Level Crossing
- > AS/RISSB 7531:2015 Lighting and Visibility

In monitoring safety improvement, ONRSR may seek information from rail infrastructure managers on the safety risks of their level crossings and proposed measures to reduce these risks and improve safety, as part of their annual reporting requirements. This could include actions from interfacing road managers to reduce safety risks, such as reduced speed limits for motorists, installation of traffic lights or road signage, increased monitoring etc.

### 10.1 Upgrades to level crossings

Changes to existing level crossings should only be to maintain or improve safety. Usually this means that passive controls are replaced with active controls<sup>7</sup> or grade separation.

Due to the high cost, such upgrade decisions should be guided by risk, and may be prioritised where appropriate based on a network assessment of risk. The intent of this approach is to achieve a greater overall level of risk-reduction. In some cases greater risk-reduction may be achieved by focussing all efforts on a single crossing and upgrading this to the highest level possible while in other cases greater benefit may come from upgrading multiple crossings. In all cases, rail infrastructure managers must still ensure that safety controls at each individual level crossing eliminate or minimise safety risks SFAIRP.

To support this, ONRSR accepts use of ALCAM as a tool to help prioritise investment (when used in conjunction with other relevant factors, such as recent occurrence history). This tool has been endorsed by state and territory ministers.

Rail infrastructure managers must still ensure that safety controls at each individual level crossing minimise safety risks SFAIRP. It may be reasonable for a level crossing with a lower safety risk (such as one that has a low volume of pedestrian or road traffic) to use lower levels of protection, such as passive controls. In the reverse however, ONRSR will expect high risk level crossings (such as fast, long trains in an urban area), to have a higher level of safety risk control.

Notification of change requirements are as per the ONRSR Notification of Change policy.

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<sup>7</sup> After grade separation, active controls offer the greatest level of protection, particularly physical barriers such as boom gates.

## 10.2 Non-operational level crossings

ONRSR expects that level crossings that are not in use by road and/or rail are visibly closed. The purpose is to encourage motorists to be alert at crossings that are actually in use, and a motorist should reasonably expect a train to approach. This is particularly important for level crossings without active protection.

Depending on the circumstances, level crossings may be:

- > temporarily or permanently closed to road/pedestrian traffic; or
- > temporarily or permanently closed to rail traffic.

Local communities are at risk when a seemingly dormant railway becomes active for rail use again. To reduce this risk, rail transport operators are expected to communicate changes with affected communities and ensure that the level crossing is signed correctly, particularly where use will be re-commencing. This should be supported by other efforts to support those communications, such as by improved vegetation maintenance or new signage.

When a railway line becomes dormant / non-operational in the longer term then crossings on the line should be treated as non-operational for rail use, as part of a revised safety management system (to support operational changes), and signed as applicable<sup>8</sup>. This may be where even infrequent use has ceased and operational rail use is not intended for the foreseeable future. An indicator may be that track maintenance has ceased or been significantly reduced. For permanent closure, it is preferable the track infrastructure be removed.

There may be times when a rail infrastructure manager seeks to 're-open' a closed level crossing. A risk assessment and any subsequent repairs and updates to safety controls must be undertaken, as well as community engagement (as above). The level crossing must comply with the legislative requirements, and may require a notification of change (refer to the ONRSR Way<sup>9</sup>).

ONRSR recognises the work of RISSB in encouraging the closure of disused and underutilised crossings, including through the publication of a guideline to assist rail infrastructure managers and road managers – the RISSB Guideline "Consolidation of public level crossings".

## 11 Management of interfaces

Road managers and rail transport operators must have an interface agreement in place for any shared *rail or road crossing*. This means they must identify the risks to safety, determine measures to minimise the risks SFAIRP, and seek to enter into an interface agreement as required by the RSNL. Where that fails, they must seek intervention from ONRSR to direct parties where necessary.

All responsible parties, including road managers (i.e. state and local government agencies), and rail transport operators (including registered persons and tramways) have respective legislative obligations under the RSNL to enter into an interface agreement. These parties are required to be pro-active in participating in the interface management process and to manage the risks to safety associated with their infrastructure at the interface. The RSNL provides for significant penalties where a public or private road or rail manager breaches their interface management requirements.

If a rail transport operator or a road manager is unable to form an agreement, for reasons such as unresponsiveness or disagreement (for example), they are encouraged to notify ONRSR. Every

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<sup>8</sup> Signage standards are set out in *AS1742.7 - Manual of Uniform Traffic Control Devices Part 7: Railway Crossings*.

<sup>9</sup> Available on the ONRSR website.

reasonable effort to seek an agreement should have been made and evidenced by written correspondence. If satisfied that every effort has been made to comply with the RSNL, ONRSR may use powers under section 110 to intervene and direct uncooperative parties, through written notice, to enter into an interface agreement by a certain date.

If this is not complied with, ONRSR may determine the arrangements that will apply and direct the parties involved to give effect to those arrangements. ONRSR may also give a notice to a party requiring them to provide information that will assist the ONRSR to make such a determination. Compliance with any direction or written notice issued by the ONRSR is mandatory and failure to comply could incur penalties under the RSNL.

These agreements are live documents and need to be continuously monitored and reviewed to ensure that the risks to safety, arising from shared rail or road crossing are appropriately managed. This process also includes revisions of measures to manage those risks. It also means that any changes in the use of the shared rail or road crossing (i.e. closure of a rail or road crossing) needs to be identified and assessed to ensure that safety risks are managed and measures to manage those risks are relevant. If changes are made as a result of this process, then the corresponding interface agreement and risk assessment should also be revised to reflect the changes.

ONRSR can seek evidence that an interface agreement was reviewed and discussed well before a change in the risk to safety was likely. This means that if either the road manager or rail transport operator is aware of a future change in safety risk, they must inform the other and develop shared strategies to ensure ongoing compliance with their safety duties under the RSNL, including seeking consultation with other stakeholders (for example, the project manager of a housing development).

Examples of where there may be a change in safety risk include:

- > increased train frequency, longer trains, increased axle load limits or increased speed
- > a new housing development in the surrounding area that will result in increased pedestrian and road vehicle traffic
- > routing of route-restricted heavy vehicles through a level crossing
- > a new mine or other worksite that increases road traffic
- > material increases in journey frequency or use by road users (ie where the local road use population increases)
- > degradation to a level crossing from frequent road use, which may cause damage to the infrastructure and contribute to a failure state.

ONRSR has published a road/rail interface agreement template and supporting guidance on the requirements, to assist public and private road managers and rail transport operators.

## **11.1 Heavy vehicle traffic**

Interface management between road and rail infrastructure managers should include specific consideration of heavy vehicle traffic. Longer, heavier vehicles carry different risks and may require changes to safety controls, for example, traffic light sequencing may need to be changed where the risk of vehicle stacking over the crossing is increased by greater passage of longer vehicles.

At the individual level, road managers with authority to permit restricted routing of heavy vehicles across a level crossing must consider the impacts of this on safety, and consult with the rail infrastructure manager. It is a requirement of the RSNL that road managers identify such risks to safety and ensure these are eliminated or minimised SFAIRP, including as part of an interface agreement with the rail infrastructure manager (whose operations will also be impacted).

At the national level, ONRSR will work with the National Heavy Vehicle Regulator to improve safety coordination, including through the systematic engagement of rail infrastructure managers in routing decisions.

## 12 Enforcement and education

ONRSR has powers under the RSNL to prosecute rail transport operators and road managers who fail to meet their legislative requirements. Compliance and enforcement activities will be initiated as per the ONRSR Way and Compliance and Enforcement policy.

As an advocate for rail safety, ONRSR aims to educate and work with rail transport operators, governments and other industry regulators to improve level crossing safety over time.